

## SECTION 905 -- PROPOSAL (CONTINUED)

I (We) further propose to execute the attached contract agreement (Section 902) as soon as the work is awarded to me (us), and to begin and complete the work within the time limit(s) provided for in the Specifications and Advertisement. I (We) also propose to execute the attached contract bond (Section 903) in an amount not less than one hundred (100) percent of the total of my (our) part, but also to guarantee the excellence of both workmanship and materials until the work is finally accepted.

I (We) enclose a certified check, cashier's check or bid bond for **five percent (5%) of total bid** and hereby agree that in case of my (our) failure to execute the contract and furnish bond within Ten (10) days after notice of award, the amount of this check (bid bond) will be forfeited to the State of Mississippi as liquidated damages arising out of my (our) failure to execute the contract as proposed. It is understood that in case I am (we are) not awarded the work, the check will be returned as provided in the Specifications.

Bidder acknowledges receipt of and has added to and made a part of the proposal and contract documents the following addendum (addenda):

ADDENDUM NO. <u>1</u>	DATED <u>11/5/2014</u>	ADDENDUM NO. _____	DATED _____
ADDENDUM NO. _____	DATED _____	ADDENDUM NO. _____	DATED _____

Number	Description
1	Revised Table of Contents; Add NTB No. 4329; NTB No. 5252 replaces NTB No. 5045; Add NTB Nos. 5264, & 5265; Add SP No. 907-810-4; Revised SP No. 907-824-1; Revised Bid Items; Revised or Added Plan Sheet No. 8001; Amendment EBS Download Required.

TOTAL ADDENDA: 1  
(Must agree with total addenda issued prior to opening of bids)

Respectfully Submitted,

DATE \_\_\_\_\_

\_\_\_\_\_  
Contractor

BY \_\_\_\_\_

Signature

TITLE \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

PHONE \_\_\_\_\_

FAX \_\_\_\_\_

E-MAIL \_\_\_\_\_

(To be filled in if a corporation)

Our corporation is chartered under the Laws of the State of \_\_\_\_\_ and the names, titles and business addresses of the executives are as follows:

_____ President	_____ Address
_____ Secretary	_____ Address
_____ Treasurer	_____ Address

The following is my (our) itemized proposal.

Revised 09/21/2005

BR-0015-01(120) / 106487301

Adams County(ies)

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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SECTION 905 - PROPOSAL, PROPOSAL BID ITEMS, COMBINATION BID PROPOSAL,  
CERTIFICATION OF PERFORMANCE - PRIOR FEDERAL-AID CONTRACTS,  
CERTIFICATION REGARDING NON-COLLUSION, DEBARMENT AND SUSPENSION, (2)  
SECTION 902 - CONTRACT FORM,  
SECTION 903 - CONTRACT BOND FORMS,  
FORM -- OCR-485.

(REVISIONS TO THE ABOVE WILL BE INDICATED ON THE SECOND SHEET  
OF SECTION 905 AS ADDENDA)

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO. 4329**

**CODE: (SP)**

**DATE: 10/24/2014**

**SUBJECT: Knee Braces**

**PROJECT: BR-0015-01(120) / 106487301 -- Adams County**

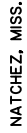
Bidders are advised that the attached drawing and photos are to be referenced when repairing the knee braces on this project.



Typical Knee Brace



Typical Knee Brace



VARIES (59'-6" AT PANEL POINT 29)

CL UPPER CHORD

CL LOWER CHORD

VERTICAL CLEARANCE 15'-11"

4'-2 1/2"

CL TRUSS

CL TRUSS

CL ROADWAY

12' LANE (TYP.)

1'-6" (TYP.)

33' c/c TRUSSES

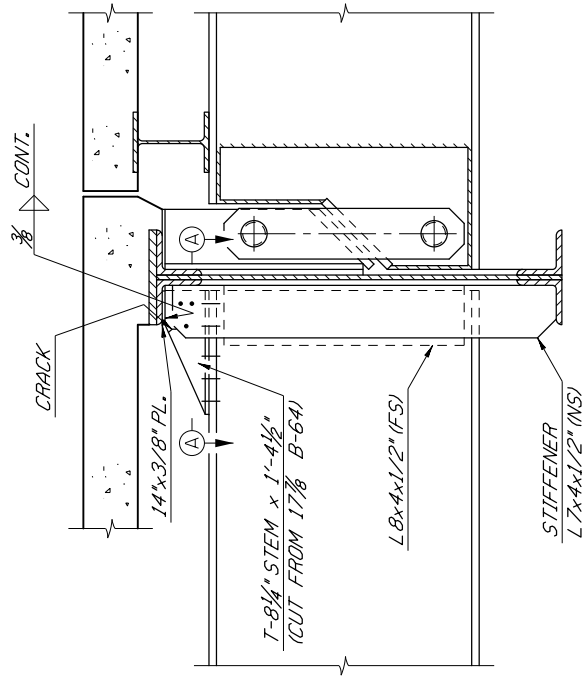
30'-5" HORIZONTAL CLEARANCE

S1

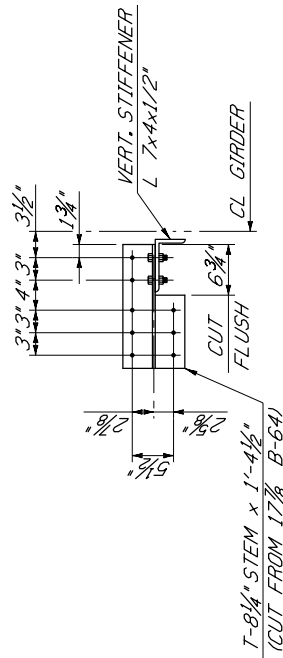
S2

S3

**TYPICAL ROADWAY SECTION**  
(EXISTING)  
(LOOKING WEST)



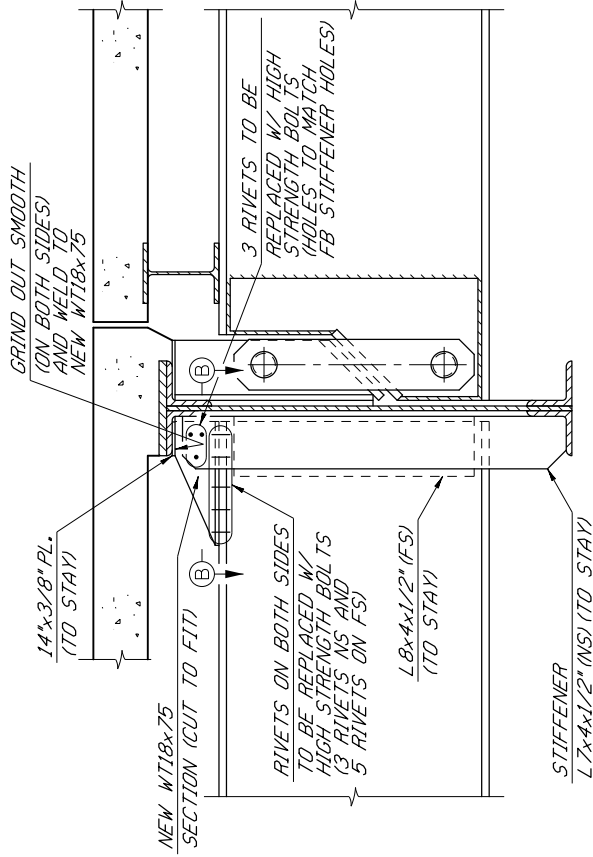
EXISTING STRINGER CONNECTION AT CONTRACTION JOINT  
(FROM DESIGN PLANS, SHEET \*300)



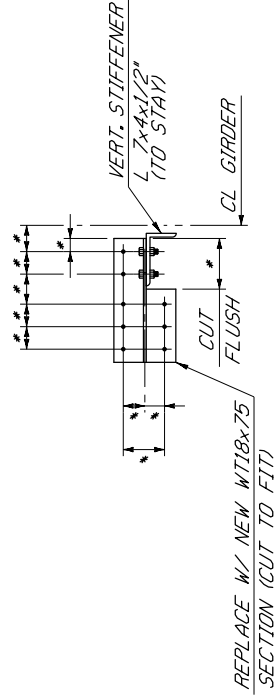
SECTION A-A  
(DETAIL FROM SHOP DRAWING, SHEET \*302)

NOTES:

FOR INFORMATION ONLY,  
CONTRACTOR SHALL VERIFY ALL DIMENSIONS,  
BOLT HOLES SHALL MATCH EXISTING RIVET HOLE LOCATIONS.  
NS - NEAR SIDE  
FS - FAR SIDE  
FB - FLOORBEAM



PROPOSED REPAIR STRINGER CONNECTION AT CONTRACTION JOINT



SECTION B-B

\* NEW HOLES IN WT SECTION NEED TO MATCH FB TOP FLANGE HOLES

MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
WESTBOUND US 84 OVER MISSISSIPPI RIVER	
REPAIRS TO KNEE BRACES AT BRUSS	
CONTRACTION JOINTS	
PROJECT STP-0015-01(110)	
105416/10100	
ADAMS	COUNTY
WORKING NUMBER	SHEET NUMBER
DESIGNED	TRACED
CHECKED	ISSUED
DATE	DATE

## MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 5252

CODE: (SP)

DATE: 10/24/2014

SUBJECT: Terminal End Sections

Guard rail terminal end sections shall be construction in accordance with the plans, specifications, and the following:

### **Flared.**

Flared terminal end sections shall be FLEAT-350, REGENT, SRT-350, ROSS-350 or approved flared equal and installed in accordance with the manufacturer's recommendation. Prior to installation, the Contractor shall provide two copies of the manufacturer's installation details to the Project Engineer. The Project Engineer will keep one copy in the project file and provide one copy to the District Maintenance Engineer. The installation details shall be engineering drawings, a minimum of 11" X 17" in size. Reflective adhesive sheeting with alternating black and yellow stripes (sloping downward at an angle of 45 degrees in the direction traffic is to pass) shall be required on the end of the terminal section. The type of terminal section installed shall be written on the device with a Permanent Marking Stick or some other means of permanent identification.

### **Non-Flared.**

Non-Flared terminal end sections shall be ET-2000, SKT-350, or approved non-flared equal (except ET-Plus) and shall be installed in accordance with the manufacturer's recommendation. Prior to installation, the Contractor shall provide two copies of the manufacturer's installation details to the Project Engineer. The Project Engineer will keep one copy in the project file and provide one copy to the District Maintenance Engineer. The installation details shall be engineering drawings, a minimum of 11" X 17" in size. Reflective adhesive sheeting with alternating black and yellow stripes (sloping downward at an angle of 45 degrees in the direction traffic is to pass) shall be required on the end of the terminal section. The type of terminal section installed shall be written on the device with a Permanent Marking Stick or some other means of permanent identification.

Likewise, impact attenuators shall be construction in accordance with the plans, specifications, and the following.

Approved impact attenuator systems shall meet standardized testing defined in Manual for Assessing Safety Hardware (MASH) or NCHRP Report 350. In addition, these devices shall have an acceptance letter from FHWA that documents the device meets the appropriate crash test criteria and can be used on the National Highway System (NHS). Prior to installation, the Contractor shall provide two copies of the manufacturer's installation details to the Project Engineer. The Project Engineer shall keep one copy in project file and provide one copy to District Maintenance Engineer. The installation details shall be engineering drawings, a minimum of 11"x17" in size. Reflective adhesive sheeting with alternating black and yellow stripes (sloping downward at an angle of 45 degrees in the direction traffic is to pass) shall be required on the end of the attenuator section. The type of system installed shall be written on the device with a Permanent Marking Stick or some other means of permanent identification.

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO. 5264**

**CODE: (SP)**

**DATE: 11/4/2014**

**SUBJECT: Pre-Bid Meeting Minutes**

**PROJECT: BR-0015-01(120) / 106487301**

Attached are the attendance roster and minutes for the Non-Mandatory Pre-Bid Meeting held on October 29, 2014, for the project.

**Pre-bid Meeting Minutes**  
**Wednesday, October 29, 2014**  
**9:00 AM**

The meeting began with MDOT personnel and Contractor representatives introducing themselves to those in attendance.

Albert White, District 7 Engineer, began the meeting by stating the importance of the project to the area, and that it will be “highly visible” to the travelling public. He also stated that he is looking forward to working with the successful bidder on the project.

Shane Martin, Area Engineer, Construction Division, stated that the minutes of the prebid meeting would be published, along with revised Special Provisions, etc., in an addendum to the proposal.

James Gregg, Project Manager, HNTB, gave a PowerPoint presentation (attached) which included the history of the bridge, and a summary of the previous attempt to repair it. Also included in the presentation was a current scope of work overview of the project.

Question: How much load was applied to the pin under the prior project to attempt to push it back in place?

Answer: The contractor applied a 1,325 kips horizontal load without removing vertical load off the pin and link. The contractor then applied a 733 kip – 830 kip vertical load and 727 kips horizontal load without moving the pin.

Question: Will the Contractor be responsible for repairing cracks in the bridge piers?

Answer: The Piers are not expected to crack. Any cracks caused by suggested sequence of construction shown in the plans will not be the responsibility of the contractor.

Question: Shouldn't the bridge be allowed to move, by installing a roller, instead of making it rigid while performing the repairs?

Answer: The Piers have jacking diaphragms and could be jacked and allowed to move. HNTB has investigated jacking the bridge, however, found the Piers and truss are capable of incurring the additional thermal load induced from changing the boundary conditions provided the contractor not engage the temporary restraints when the daily temperature is below 40 degrees and live load is limited to a truck mounted crane and vehicles on the bridge. If the contractor choose to jack the bridge, it will be considered a re-design and the contractor shall comply with the “plan changes by contractor” noted on sheet 8002. If the contractor chooses to jack the bridge, he will be responsible for providing a means to ensure the bridge can be reset on the bearing assemblies.

Question: Was any ultrasonic testing done on the pins?

Answer: Yes, ultrasonic testing of the pins was completed in 2010 and 2013. Tests indicated acoustic coupling between the pin and link which could mean either high stresses or a fusing of the pin and the link.

Question: What construction equipment was considered for design loading purposes?

Answer: It was assumed that minimal to no construction load would be placed on the suspended span side of the pin and link during removal. Any construction equipment placed on the cantilever side of the truss would not affect the load in the pin and link. It was assumed the contractor would use a truck mounted crane to remove and replace the pin and link. Contractor shall be required to submit equipment weights and locations during pin and link removal to the Director of Structures, State Bridge Engineer for review and approval.

Question: Will MDOT entertain extending the time period to close the bridge from seven (7) weeks to ten (10) or (12) weeks to make necessary repairs?

Answer: MDOT is not agreeable to extending the time period to close the bridge. Contractor will be charged \$5,000 per day for each day beyond the seven (7) weeks as stated on page 51 of the construction proposal. Contractor will be permitted to close one lane of traffic before and after the seven (7) week provided they are within the hours stipulated on page 8002 of the plans or with written permission from the project engineer.

Question: Is this project a design-build, or a design-bid-build?

Answer: Design-bid-build. The RFQ/RFP process was used as a tool to ensure that only qualified contractors would be able to bid on the project.

Question: Can MDOT post a range letter as is done for the normal letting process?

Answer: Yes, MDOT anticipates a range of \$1,000,000 to \$5,000,000

Question: How can contractors post questions regarding the project proposal since it is not in the normal letting process?

Answer: Questions may be emailed to Shane Martin, unless a different method is determined.

Question: What is the purpose of the strain gauges?

Answer: The intent of the strain gauges is to monitor the stresses in the truss due to the fact the project will change the boundary conditions on the bridge. Strain gauges may be moved if a better location than what is shown in the plans and proposal if better information can be obtained.

Question: Who will be conducting CE&I?

Answer: MDOT District 7 will lead CE&I and Steve Smith, MDOT Resident/Project Engineer will be the project engineer for this project. HNTB plans to have staff on site during the pin and link removal to assist MDOT.

The meeting was adjourned at 10:20, followed by a site visit.

## MEETING AGENDA



# HNTB

Date: Wednesday 10/29/14 9:00 AM

Meeting Name: US 84 Mississippi River Bridge Pin and Link Replacement

Location: Natchez Visitor Center (Natchez, MS)

Purpose: Pre-Bid Meeting

### MEETING AGENDA

- Introductions (5 - 10 mins)
  - MDOT, DOTD, HNTB, Contractors
- Opening remarks – Albert White – District Engineer, MDOT district 7
- Construction proposal – Shane Martin – MDOT Construction
- Presentation by HNTB (30-45 mins)
  - Project history
  - Construction scope of work
  - Key items to the project
  - Q&A
- Site Visit (1 – 1.5 hrs)
  - Natchez crossover
  - L28, L29, U29
  - L48, L49, U49
  - Vidalia crossover



**HNTB**

US 84 Mississippi River Bridge Pin and Link Replacement

Wednesday, October 29, 2014 @ 9:00A.M.

Natchez Visitor Center (Natchez, MS)

Name

Organization

Contact Information

James Gregg	HNTB	JGregg@HNTB.COM
TONY SHURTLE	"	TSHURTLE@HNTB.COM
David Shuvalov	Huval & Partners	dshuvalov@huval.com
David Huval Jr	C.E.C. Inc	dihuval@cecinc.us
REID ROMERO	Huval & Assoc.	RRomero@HuvalAssoc.com
Jeff Gidden	Gidden & Associates, Inc.	jgidden@gidden.com
Colby Guidry	Huval Assoc	cguidry@huval.com
Alan Dupuy	LA DOTD	alan.dupuy@la.gov
Amy Giddens	LA DOTD	amy.giddens@la.gov
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Holly Thomas	LA DOTD	holly.thomas@la.gov
Bradnahe Tunquist	MDOT - Bridge	btunquist@mdot.ms.gov
Haven Cuyler	MDOT - Bridge	hcuyler@mdot.ms.gov
Justin Walker	MDOT - Bridge	jwalker@mdot.ms.gov
Ker Morris	MDOT - District	kmorris@mdot.ms.gov
Ryan Jordan	MDOT - District	rjordan@mdot.ms.gov





# US 84 Mississippi River Bridge

U29 And U49 Pin and Link Replacement Pre-Bid Meeting

10/29/2014



# US 84 Mississippi River Bridge Pin And Link Replacement

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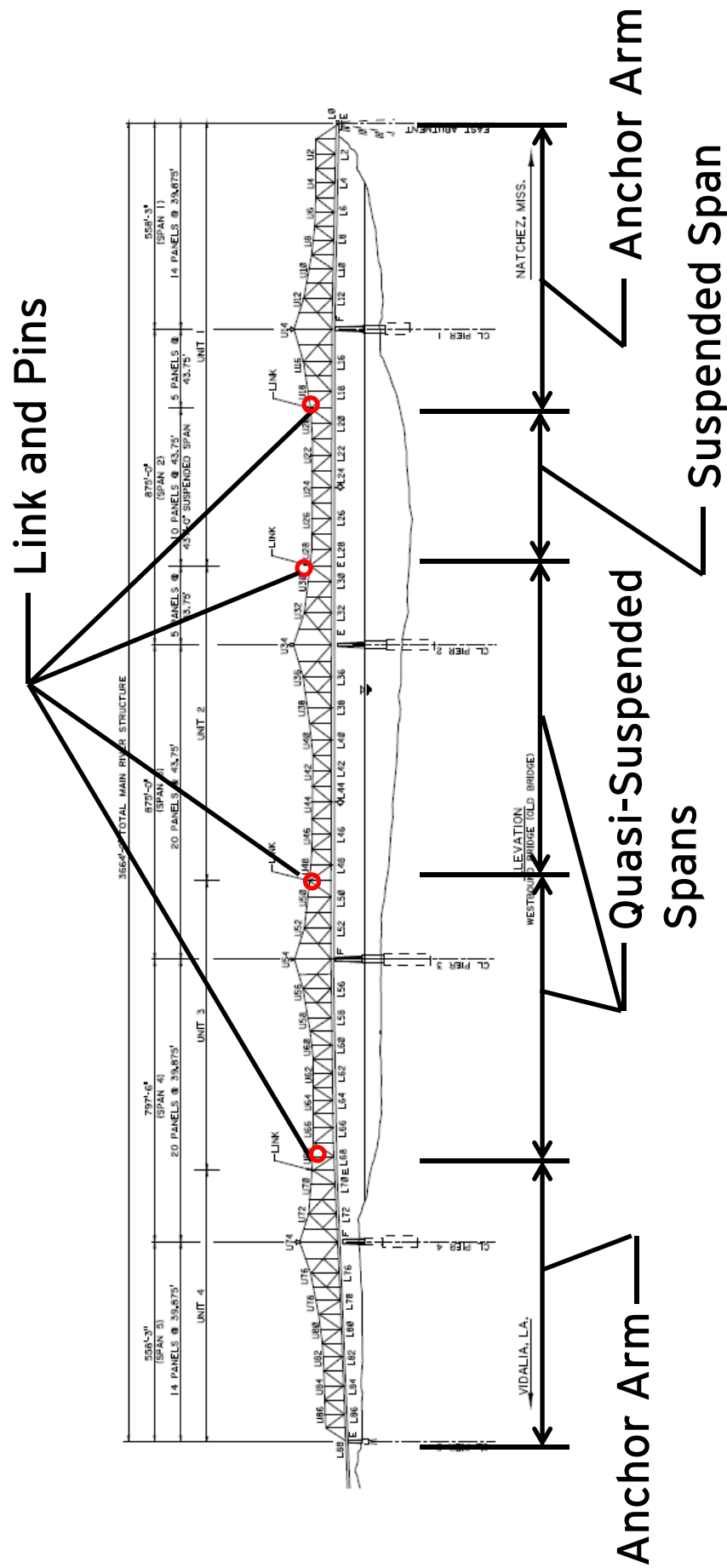
## Pre-Bid Meeting

### Overview

- Brief history of the project
- Scope of work
- Key points to project
- Contractor Q/A
- Site visit

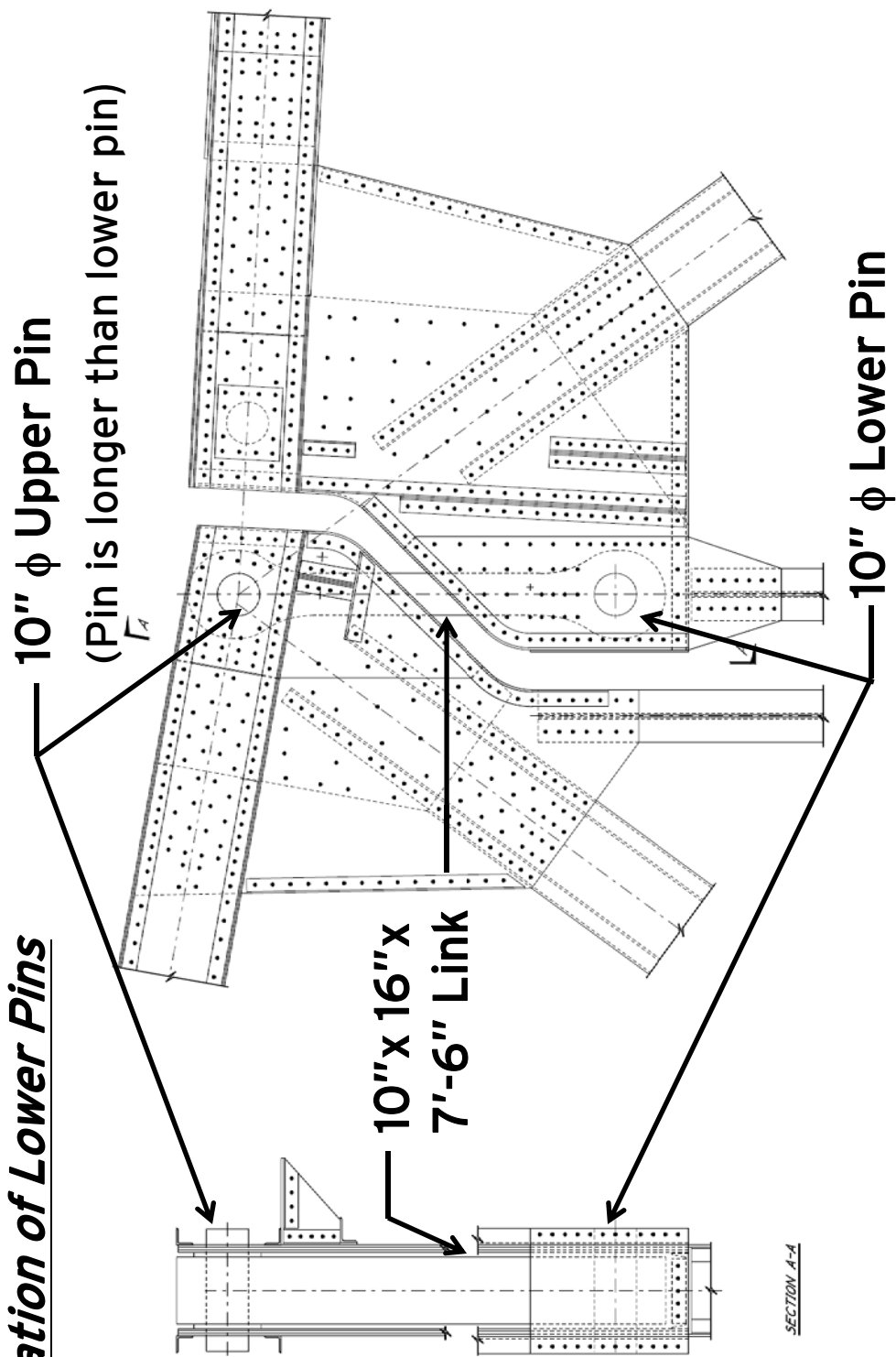
# US 84 Mississippi River Bridge Pin And Link Replacement

## Location of Pins



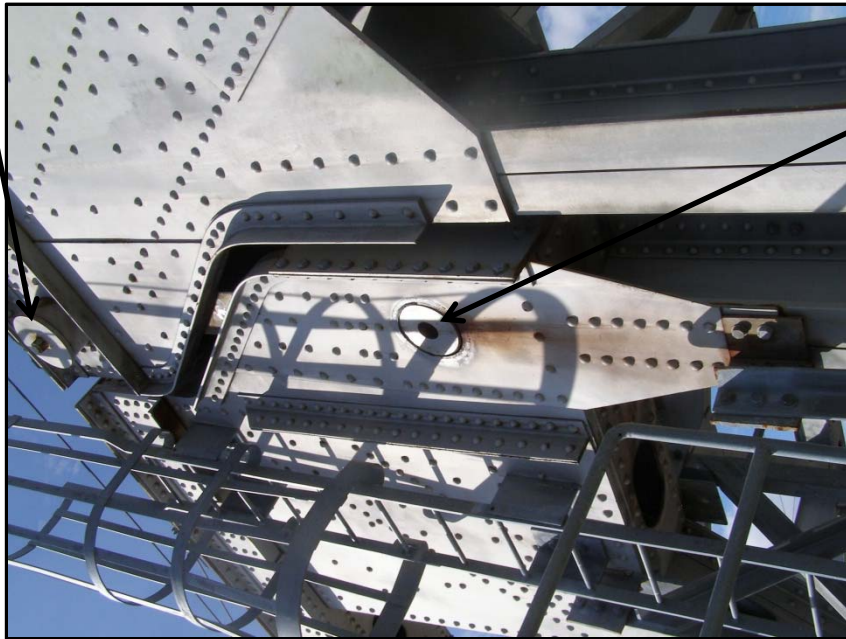
# US 84 Mississippi River Bridge Pin And Link Replacement

## Location of Lower Pins

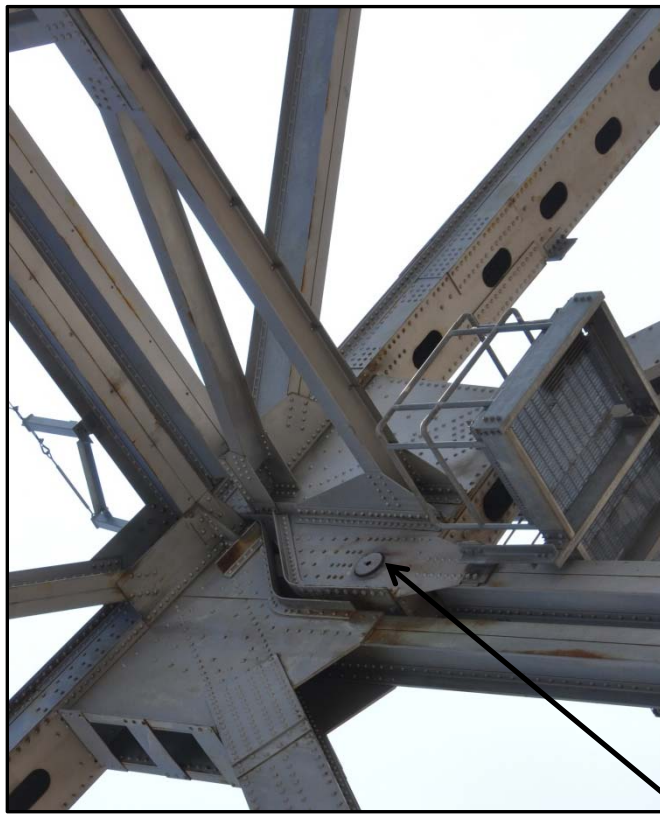


# US 84 Mississippi River Bridge Pin And Link Replacement

U49 Lower Pin



U49 Upper Pin



U49 Lower Pin

# US 84 Mississippi River Bridge Pin And Link Replacement

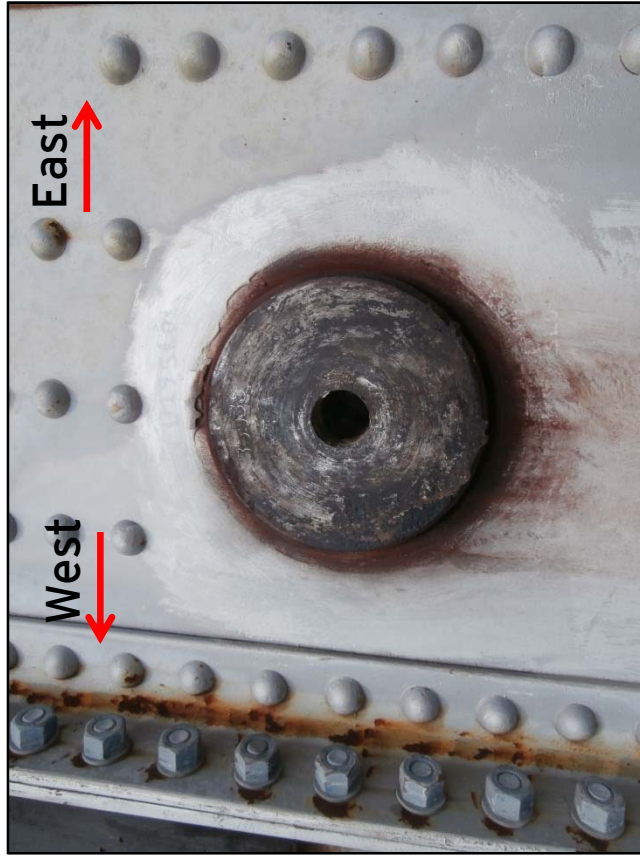
## U29 Downstream Truss (Upstream Side)



1995	2010	2012	2014
0.000" Rotated 2 3/4"	0.000"	-0.0625"	-0.0625"

# US 84 Mississippi River Bridge Pin And Link Replacement

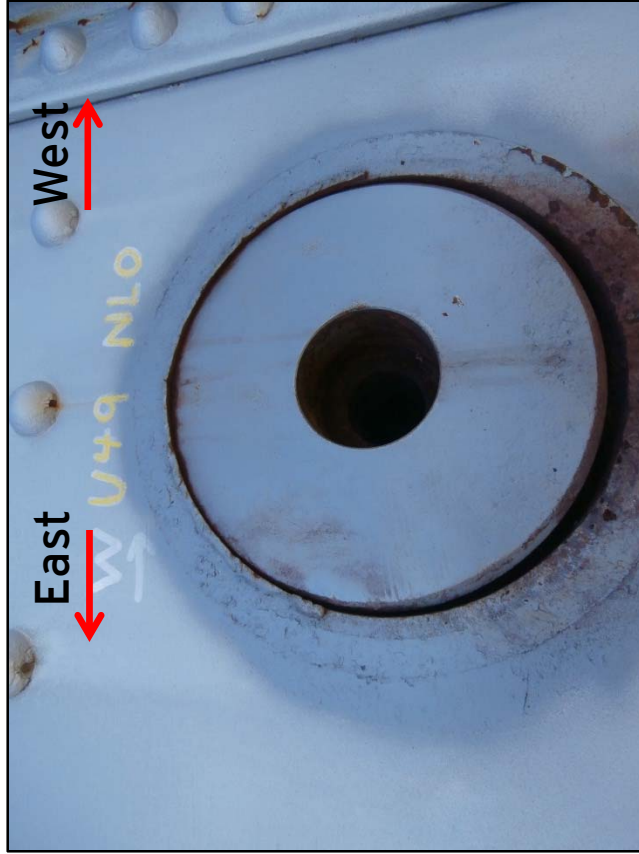
## U29 Downstream Truss (Downstream Side)



1995	2010	2012	2014
1.000" Rotated 2 3/4"	1.000"	1.0625"	1.0625"

# US 84 Mississippi River Bridge Pin And Link Replacement

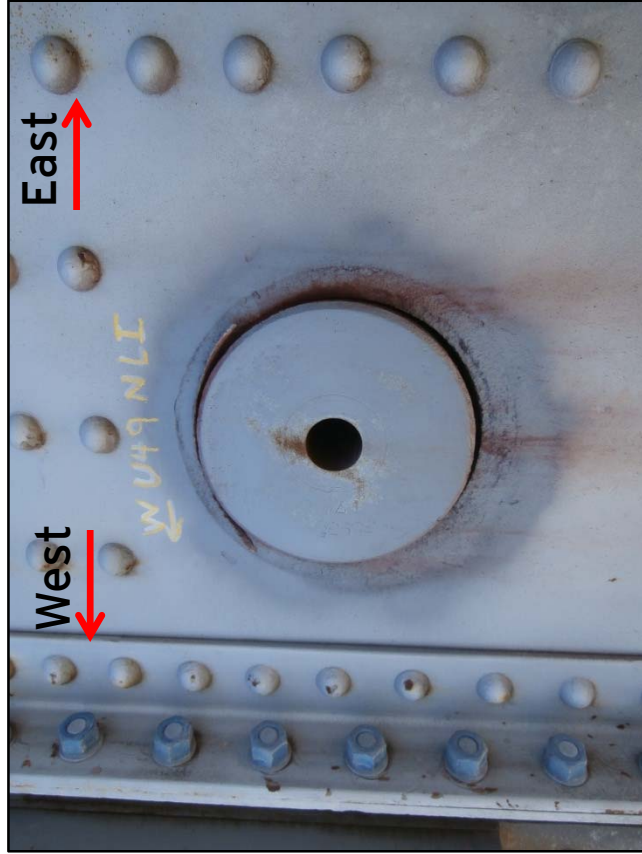
## U49 Upstream Truss (Upstream Side)



1995	2010	2012	2014
Not measured	0.0625"	0.028"	0.028"

# US 84 Mississippi River Bridge Pin And Link Replacement

## U49 Upstream Truss (Downstream Side)



1995	2010	2012	2012
Not measured	0.8125"	1.0"	1.0"

# US 84 Mississippi River Bridge Pin And Link Replacement

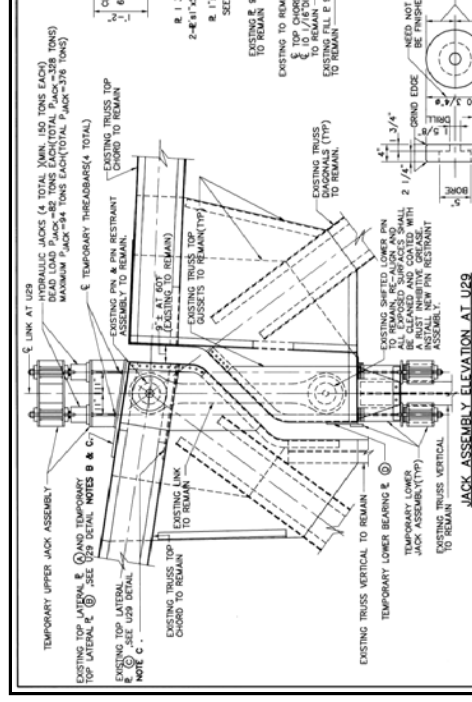
## 1996 U29 Pin Rehabilitation Project



# US 84 Mississippi River Bridge Pin And Link Replacement

## 1996 U29 Pin Rehabilitation Project (Overview)

- Project entailed resetting U29 Lower Pin
- Contractor made 3 attempts to reset pin without removing vertical load
- Contractor made one attempt to reset pin with removing vertical load an applying 726 kips of horizontal load
- Contractor was unsuccessful on all four attempts
- Contractor released from project and MDOT has monitored pins



# US 84 Mississippi River Bridge Pin And Link Replacement

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## 1996 U29 Pin Rehabilitation Project (Lessons Learned)

- Vertical load must be removed from Pin and Link
  - Contractor should not have been allowed to reset pin without bypassing the vertical load
- Traffic will affect load in link and pin
  - Traffic was allowed on bridge during pin resetting
- Unsure if all load was removed from the link
  - No means to ensure load was removed
  - Excessive vertical PT force might put the link in compression
- Contractor did not attempt to rotate pin
  - Rotating pin in direction of grooves might have helped

# **US 84 Mississippi River Bridge Pin And Link Replacement**

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## **Pin Rehabilitation Project 2014-2015**

# US 84 Mississippi River Bridge Pin And Link Replacement

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## Pin Rehabilitation Options

MDOT Considered 4 options (Option 4 chosen)

### Option 1 – Restrain and Monitor

- Low cost option that is less intrusive

### Option 2 – Reset Pins

- Repeat of the 1996 attempt

### Option 3 – Replace Pins

- Replace lower pin but not link

### Option 4- Replace Lower and Upper Pins and Links

- Remove and replace existing upper and lower pins and links
- Option Chosen by MDOT and Louisiana DOTD

# US 84 Mississippi River Bridge Pin And Link Replacement

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## Scope of Work

### Overview

- Remove and replace the pins and link at U29 Downstream truss and U49 Upstream truss
- Inspect remaining links
- Monitor the bridge
- Construct temporary crossover
- Replace cracked knee brace at L19 stringer 1

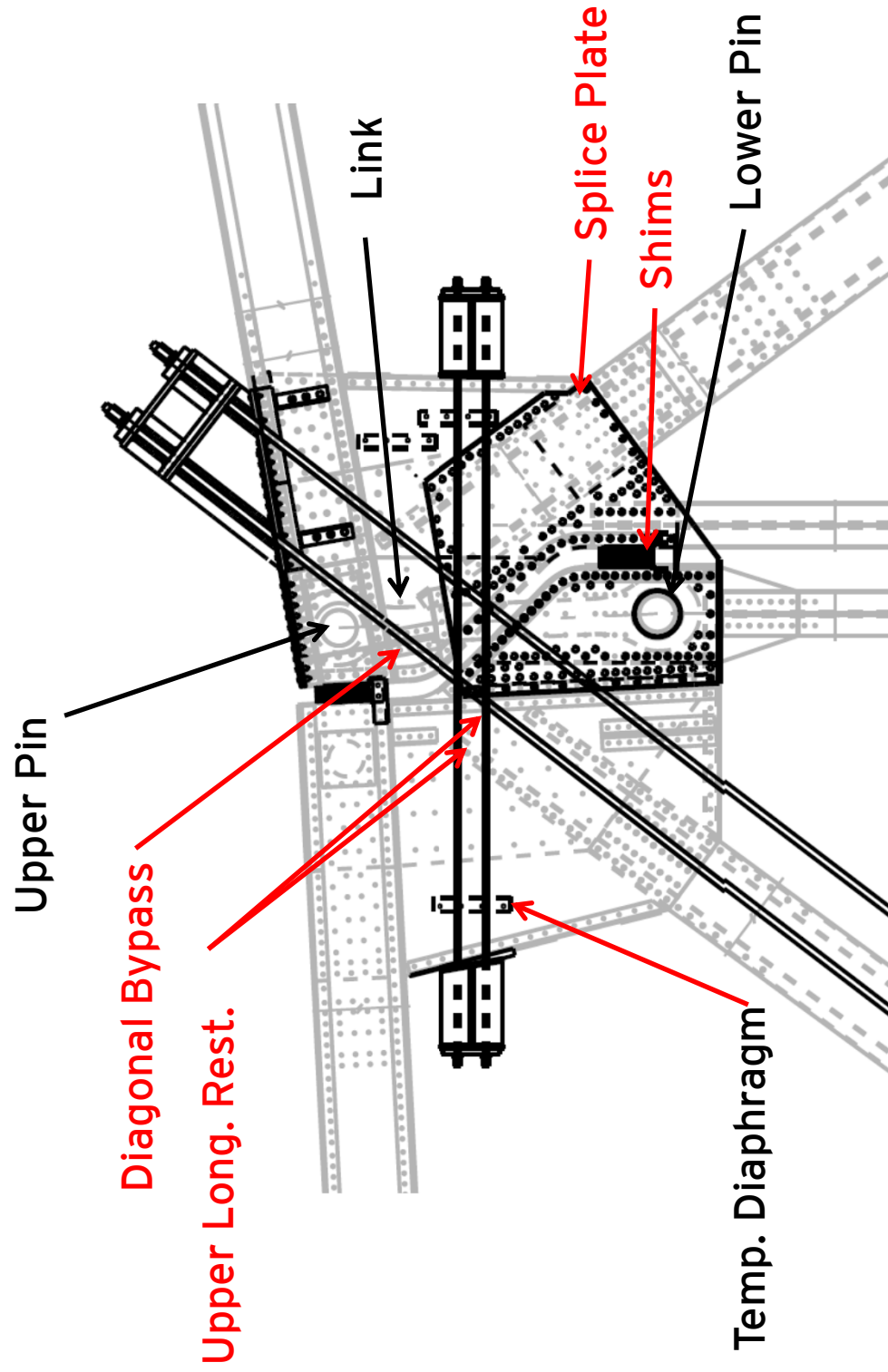
# US 84 Mississippi River Bridge Pin And Link Replacement

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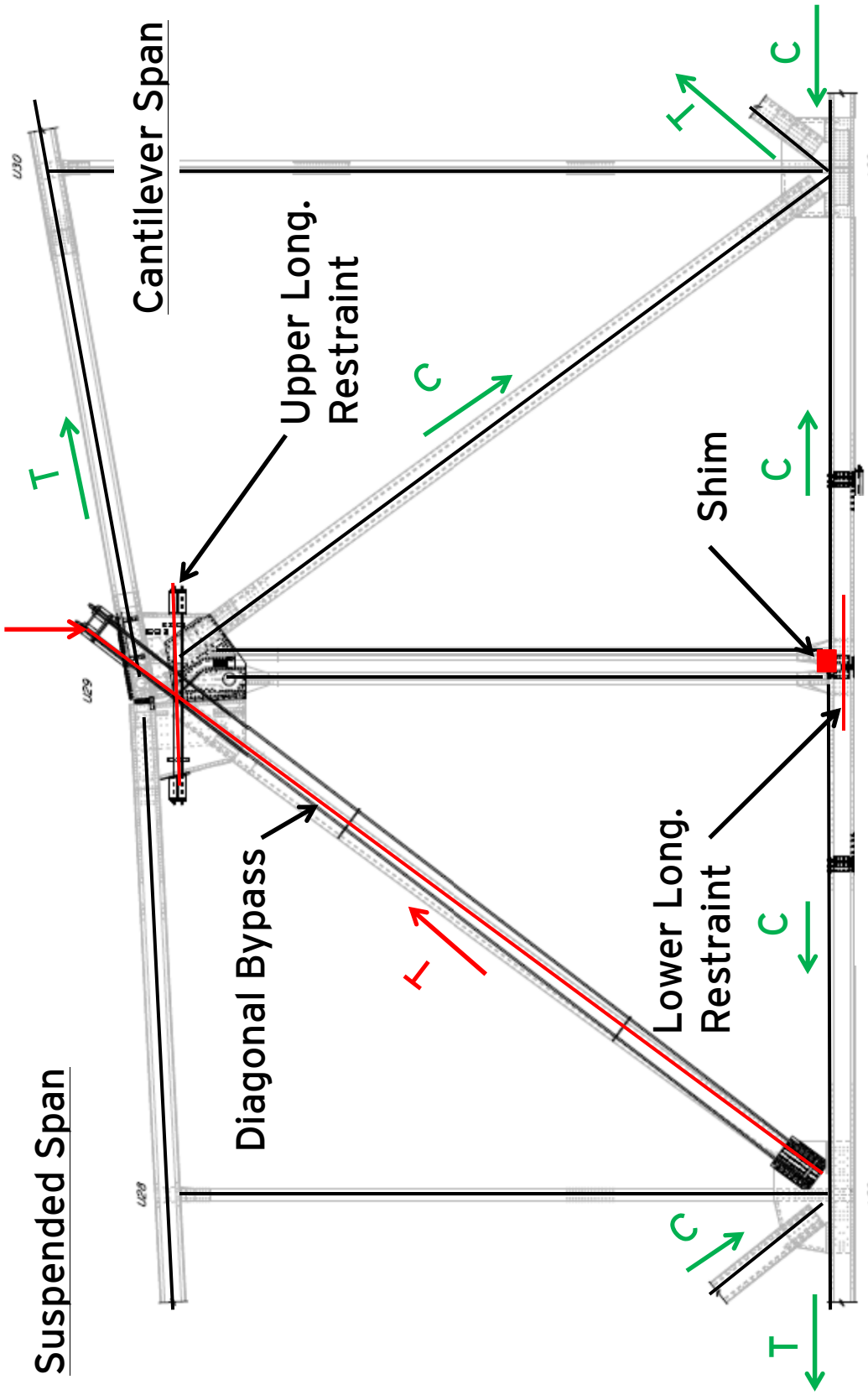
## *Pin and Link Removal (Suggested Sequence of Construction)*

- Construct crossovers and redirect traffic to EB Bridge
- Install temporary restraints
- Lock joint (tension restraints)
- Cut link to remove remaining load
- Remove upper and lower pins and link
- Line Bore new hole in existing gussets
- Fabricate new link
- Install new upper and lower pins and link

# US 84 Mississippi River Bridge Pin And Link Replacement



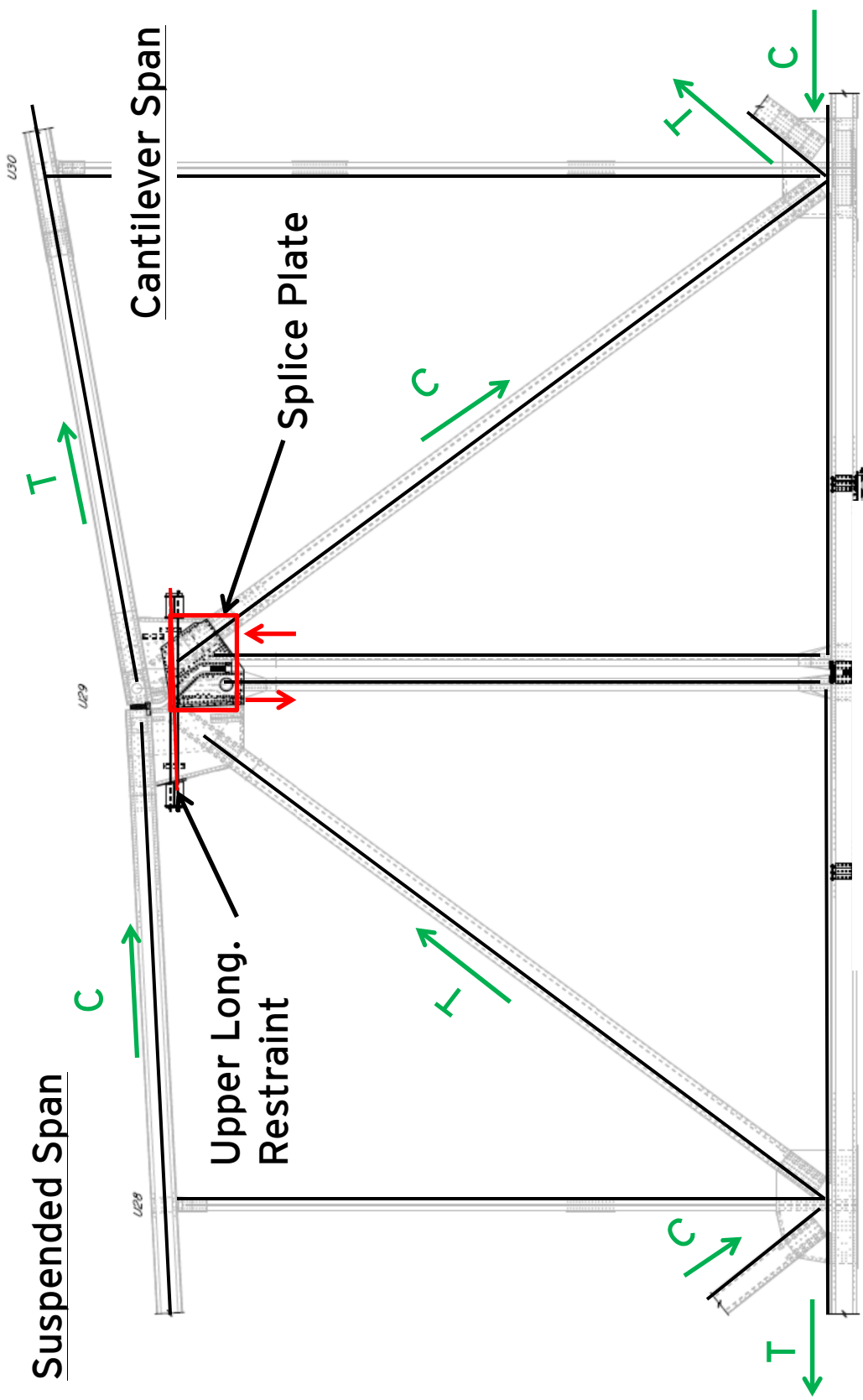
# US 84 Mississippi River Bridge Pin And Link Replacement



Bypass - Load Path A (Diagonal Bypass)

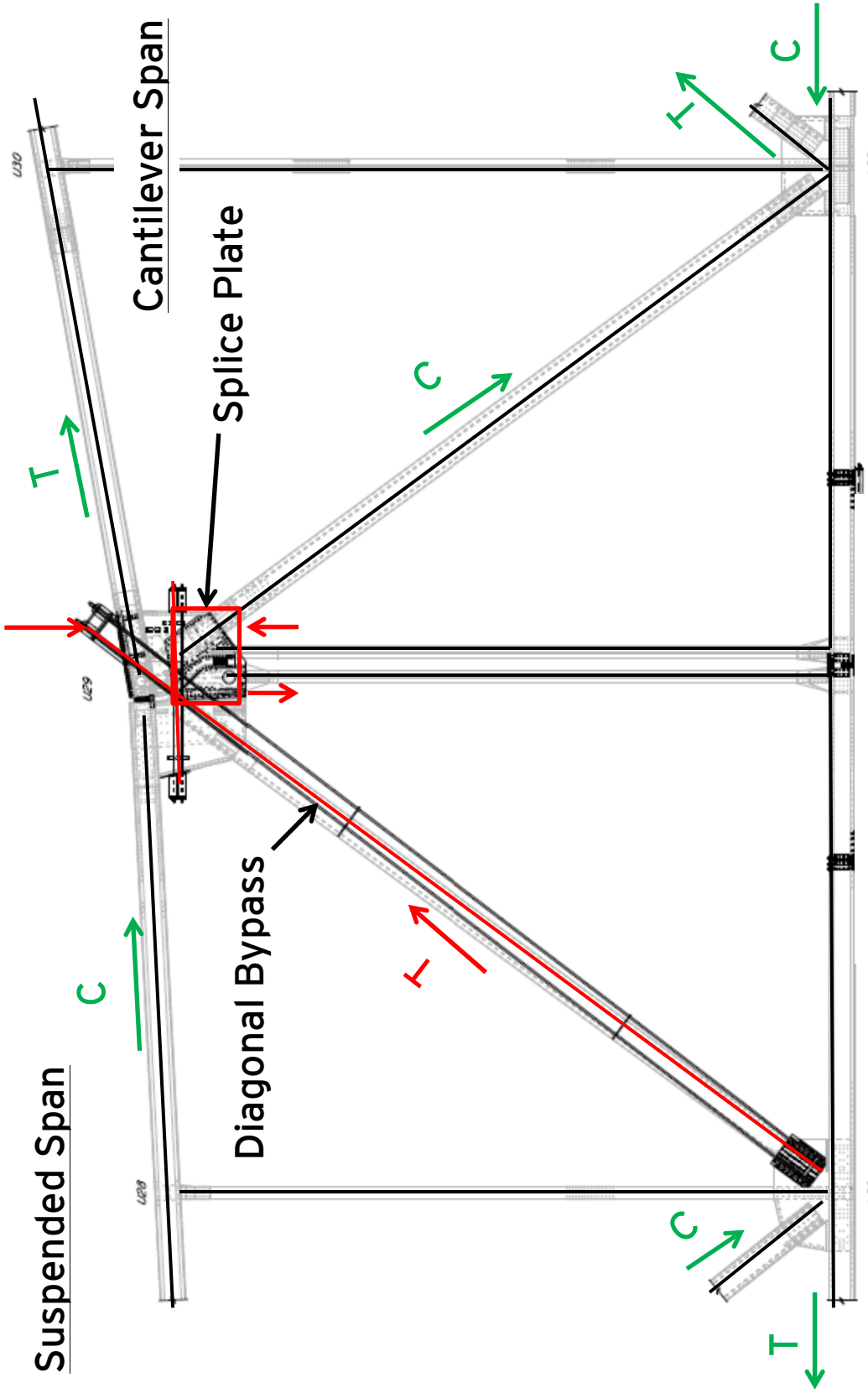


# US 84 Mississippi River Bridge Pin And Link Replacement



Bypass - Load Path B (Splice Plate)

# US 84 Mississippi River Bridge Pin And Link Replacement



Bypass - Load Path C (Anticipated Load Path)

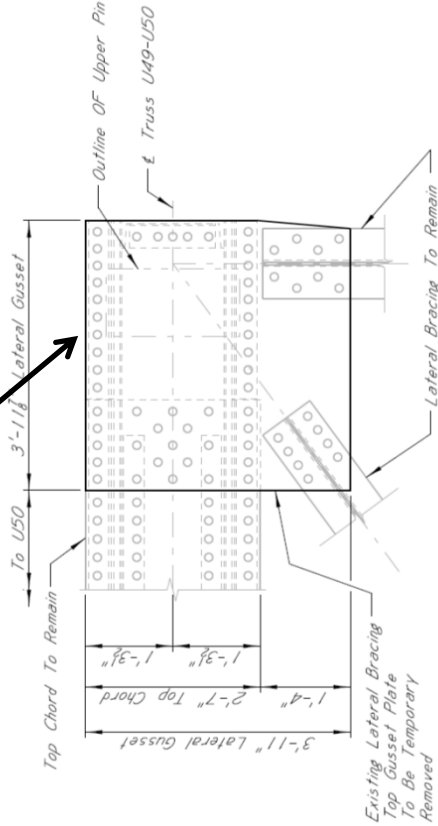
# US 84 Mississippi River Bridge Pin And Link Replacement

## Pin Rehabilitation Option 4 - **Replace** Link and Pins

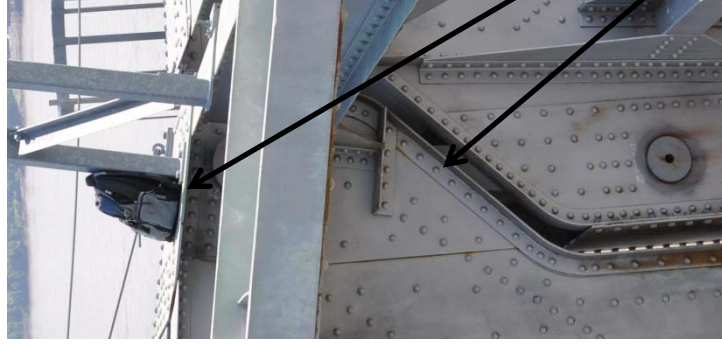
### Remove Link and Pins

Remove plate

- Remove top lateral plate
- Cut Link from the top



EXISTING U49 UPSTREAM PLAN VIEW  
LATERAL BRACING TOP GUSSET PLATE REMOVAL



## US 84 Mississippi River Bridge Pin Rehabilitation

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### Notes

- Contractor will be permitted to close WB bridge to traffic for a maximum of 7 weeks
- Contractor will not be permitted to engage temporary restraints when the temperature is below 40 degrees
  - Anticipated removal is between May - August
- Locking the U29 and U49 will change the bridge boundary conditions
  - Pier is expected to flex and truss experience additional force due to temperature
  - Contractor to inspect Piers before and after pin and link removal
  - Contractor to monitor truss members

# US 84 Mississippi River Bridge Pin Rehabilitation

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## Notes

- Contractor will be permitted to adjust plans with written permission from MDOT
  - All changes are the responsibility and repercussions are the responsibility of the contractor
  - Any change that reduces the current factor of safety or redundancy during pin and link removal will not be approved
  - Joints must be fully restrained “locked” during removal
  - Temporary gusset diaphragms and temporary chord diaphragms are required
- Temporary Restraints Installation
  - Sequence is important otherwise access may be difficult or not possible

## US 84 Mississippi River Bridge Pin Rehabilitation

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### Notes

- Contractor shall field verify all dimensions
- Submittals
  - Contractor shall submit shop drawings for permanent and temporary steel
  - Contractor shall submit pin and link removal plan which should include the following:
    - Sequence of construction
    - Means and methods
    - Equipment and location of equipment during pin and link removal
    - Schedule

## US 84 Mississippi River Bridge Pin Rehabilitation

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### Notes

- Panel point U29 and U49 are similar but very different
  - In 1940 labor was cheap and materials expensive
  - Steel was optimized on every joint
- U29 and U49 are expansion joints and move with temperature change
  - Joints will move during day
  - 4" to 5" opening observed at 80 to 90 degrees
  - 7" to 8" opening observed at 40 to 50 degrees
- Pins and Links are to become property of MDOT after removal

# US 84 Mississippi River Bridge Pin Rehabilitation

## Questions ?



## **MISSISSIPPI DEPARTMENT OF TRANSPORTATION**

**SECTION 904 - NOTICE TO BIDDERS NO. 5265**

**CODE: (SP)**

**DATE: 10/14/2014**

**SUBJECT: Additional Construction Requirements**

**PROJECT: BR-0015-01(120) / 106487301 – Adams County**

A work plan shall be submitted to the US Coast Guard for approval before any work may commence. The work plan shall include, but not be limited to: scope of work, equipment to be used including any floating plants, and any request for temporary restrictions to the horizontal and/or vertical clearances of the navigational channel.

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-810-4**

**CODE: (SP)**

**DATE: 10/23/2014**

**SUBJECT: Repairs to Knee Braces at Truss Contraction Joints**

**PROJECT: BR-0015-01(120) / 106487301 -- Adams County**

Section 810, Steel Structures, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as amended by this special provision is applicable for Repairs to Knee Braces at Truss Contraction Joints Only.

**907-810.01--General.** This work consists of retrofitting of the stringer knee braces at the truss contraction joint STR S1 at Floorbeam 19. Additional locations, found during construction, shall be repaired as directed by the Engineer.

**907-810.02--Material.** The material shall conform to Subsection 810.02. All bolts, nuts, washers and Direct Tension Indicator (DTI) shall conform to the requirements of Subsection 717.02 for such items. One washer will be required beneath the turning element.

**907-810.03--Construction Requirements.**

**907-810.03.1--Installation.** Repair procedure shall include removing existing knee brace connecting floorbeam and stringer top flanges. Welding along the top of existing knee brace web shall be grinded smooth on both sides. Rivets connecting knee brace to floorbeam vertical stiffener and stringer top flange shall be removed.

Existing knee brace shall be replaced with new WT18X75 section which shall be cut to fit. The new knee brace shall be connected to vertical stiffener and stringer top flange using high strength bolts. New bolt holes shall match existing holes in the vertical stiffener and the stringer top flange. Bolts shall be of equal diameter as existing rivets. The Notice To Bidders entitled "Knee Braces" shall be used as a guide and Contractor shall verify all the dimensions in the field. No traffic shall be on the lane while knee brace is being removed.

Shop drawings shall be submitted to the Engineer prior to fabrication for approval. Fabrication and erection shall be in accordance with applicable requirements of Section 810.

**907-810.03.2--Painting.** Painting shall conform to the requirements of Sections 710 and 814.

**907-810.04--Method of Measurement.** Repairs to Knee Braces at Truss Contraction Joints will be measured as per each.

**907-810.05--Basis of Payment.** Repairs to Knee Braces at Truss Contraction Joints, measured as prescribed above, shall be paid for at the contract price per each, which price shall include

furnishing all labor, material, equipment, tools, and all incidentals necessary for completion of the work.

Payment will be under:

907-810-D: Repairs to Knee Braces at Truss Contraction Joints - per each

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**SPECIAL PROVISION NO. 907-824-1**

**CODE: (SP)**

**DATE: 09/30/2014**

**SUBJECT: Bridge Repair**

**PROJECT: BR-0015-01(120) / 106487301 -- Adams County**

Section 907-824, Bridge Repair, is hereby added to and made part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

## **SECTION 907-824 -- BRIDGE REPAIR**

**907-824.01--Description.** This work consists of furnishing and installing materials and labor necessary to repair, inspect, and monitor the structural steel components of the US 84 Mississippi River Bridge at Natchez.

**907-824.01.1--Pin and Link Removal and Replacement.** This work consists of all materials and labor to remove and replace the upper and lower pins and link at panel point U29 downstream truss and panel point U49 upstream truss on the Westbound US 84 Mississippi River Bridge in accordance with the plans and specifications. The location of the pins and links to be replaced are shown in the plans.

This work also consists of all materials and labor necessary to safely restrain and bypass the load for panel points U29 downstream truss and U49 upstream truss on the Westbound US 84 Mississippi River Bridge during removal and replacement of the pins and links. Temporary restraints shall provide two independent load paths at all times for panel point U29 downstream truss and panel point U49 upstream truss when the pins and links are removed as well as lock the panel points from rotating and translating during pin and link removal and replacement. U29 upstream truss and U49 downstream truss shall also be restrained from longitudinal movement during pin and link removal and replacement. A detailed suggested sequence of construction is shown in the plans.

**907-824.01.2--Link Inspection.** This work consists of all materials and labor to remove the top lateral and cover plates at panel point U19 and U69 upstream and downstream trusses, panel point U29 upstream truss and panel point U49 downstream truss on the Westbound US 84 Mississippi River Bridge in order to allow MDOT to inspect the existing links. For location of the top lateral, cover plates and location of panel points are shown in the plans.

This work also consists of removing rivets/ bolts to temporarily remove the top lateral and cover plates and reinstall high strength bolts.

This work also consists of temporarily removing the lower pin rods on U49 downstream truss and U69 upstream truss to inspect the pins. Contractor shall retighten pin rods when complete.

Contractor shall be responsible for replacing pin rods if broken during removal. Pin rod details can be found on page 8094 of the plans.

**907-824.01.3--Truss Monitoring.** This work consists of temporarily installing strain gauges and monitoring stresses/ forces in existing and new truss members on the Westbound US 84 Mississippi River Bridge. Strain gauges shall be surface mounted to the truss members and continuously record data sufficient to capture changes in member stresses/forces beginning 120 hours prior to stressing temporary restraints for the first pin and link removal and replacement and until 24 hours after successful completion of the second pin and link removal and replacement and all temporary restraints are unstressed.

Contractor shall allow MDOT to continuously monitor member stresses/forces remotely and in real-time.

Contractor shall be responsible for submitting an instrumentation plan to the Director of Structures, State Bridge Engineer for review and approval prior to procuring any equipment. The instrumentation plan shall include but not limited to strain gauge specifications, location of gauges, strain gauge mounting details, power supply and data acquisition.

This work shall also consist of visually inspecting Piers 1, 2 and 3 for cracks prior to post-tensioning any temporary restraints and after replacing each pin and link. Visual inspection shall entail being within in hands reach of the entire Pier from the waterline to the top of Pier. If cracks are observed prior to post-tensioning, crack gauges shall be installed. Contractor shall document location, lengths and sizes of all cracks.

Contractor shall not be permitted to weld to the existing truss members or new eyebars.

**907-824.02--Material.**

**907-824.02.1--Pin and Link Removal and Replacement.** All new and temporary structural steel shall conform to ASTM A709 (Grade 50) unless noted otherwise in the plans. All temporary bolts/ threaded rods shall conform to ASTM A490 or ASTM A354 (Grade BD). All temporary post-tensioning bars shall conform to ASTM A722, Type II (Grade 150) unless noted otherwise in the plans. All temporary post-tensioning bars shall not be reused.

All permanent bolts shall conform to ASTM A325. All new pin steel shall conform to ASTM A668, Class G. All new eyebar steel shall conform to ASTM A709 (Grade 50F3). All new pin and eyebar steel are fracture critical and shall meet AASHTO and ASTM testing requirements for fracture critical members.

**907-824.02.2--Link Inspection.** High Strength bolts shall conform to ASTM Designation: A325 for structural steel joints. Bolted connections shall be equal diameter of the rivets to be replaced. All bolts, nuts, washers and Direct Tension Indicator (DTI) shall conform to the requirements of Subsection 717.02 for such items. One washer will be required beneath the turning element.

**907-824.02.3--Truss Monitoring.** Strain gauges and data acquisition system shall accurately measure changes in stress/strain less than +/- 5 micro-strains. The strain gauges shall report data on a five (5) minute or less sample rate. The strain gauges shall be temperature compensated and properly protected from harsh environmental conditions. Data acquisition system should be wireless and allow for multiple members to be recorded at a time.

**907-824.03--Construction Requirements.**

**907-824.03.1--Pin and Link Removal and Replacement.** The Contractor shall only be permitted to remove and replace one pin and link location (U29 or U49) at a time. The Contractor shall only be permitted to install temporary restraints for one pin and link location at a time. A detailed suggested sequence of construction is shown in the plans.

Rivets shall be removed by knocking off the rivet heads using a pneumatic rivet buster and then forcing the rivet shanks out of its hole using a powered impact tool. If necessary, the rivet hole should then be drilled out to obtain an aligned hole through the connected parts. Rivet heads and rivet shanks shall be removed only using mechanical methods.

Bolts shall be removed by using a hand wrench or by cutting using a saw or a power tool. If necessary, the bolt hole should then be drilled out to obtain an aligned hole through the connected parts. Existing bolts shall not be reused.

Flame cutting shall not be used to remove the rivet heads, shanks or bolts. Rivets or bolts shall be removed one at a time per member and at no time shall there be more than one rivet or bolt removed in a given connection, unless noted otherwise in the plans. Rivet or bolt removal process shall not gouge or damage the adjacent metal in the structure. High strength bolts shall be installed as per Subsection 810.03.1 and shall be inspected as per Subsection 810.03.2

Flame cutting shall not be permitted on the existing truss.

The Contractor shall paint all new steel, damaged steel or coating as well as permanent bolts per MDOT standard specifications.

**907-824.03.2--Link Inspection.** The Contractor shall remove top lateral and cover plate's in order to allow MDOT to inspect the links prior to removing the pins at U29 and U49. The Contractor shall allow MDOT adequate time to inspect the links prior to reinstalling the top lateral and cover plates. Once either the top lateral plate or cover plate is removed, the Contractor shall reinstall the existing top lateral and cover plate within 24 hours, unless directed otherwise by the Project Engineer.

The Contractor shall only be permitted to remove one upstream or downstream truss panel point's top lateral and cover plate at a time.

Rivets shall be removed by knocking off the rivet heads using a pneumatic rivet buster and then forcing the rivet shanks out of its hole using a powered impact tool. If necessary, the rivet hole

should then be drilled out to obtain an aligned hole through the connected parts. Rivet heads and rivet shanks shall be removed only using mechanical methods.

Bolts shall be removed by using a hand wrench or by cutting using a saw or a power tool. If necessary, the bolt hole should then be drilled out to obtain an aligned hole through the connected parts. Existing bolts shall not be reused.

Flame cutting shall not be used to remove the rivet heads, shanks or bolts. Rivets or bolts shall be removed one at a time per member. Rivet or bolt removal process shall not gouge or damage the adjacent metal in the structure. High strength bolts shall be installed as per Subsection 810.03.1 and shall be inspected as per Subsection 810.03.2

The Contractor shall paint all damaged steel or coating as well as new bolts per MDOT standard specifications.

**907-824.03.3--Truss Monitoring.** Strain gauges shall be surface-mounted and located to ensure gauges do not get damaged or come loose. Mounting brackets shall ensure gauges do not slip based on the expected displacements. Strain gauges shall be mounted at midpoint of truss members. The Contractor shall continuously monitor the following members:

- U19 Upstream Truss Existing Link
- U19 Downstream Truss Existing Link
- U29 Upstream Truss Existing Link
- U49 Downstream Truss Existing Link
- U29 Downstream Truss Existing Link
- U29 Downstream Truss New Eyebars\*
- U49 Upstream Truss Existing Link
- U49 Upstream Truss New Eyebars\*
- U28-U29 Downstream Truss
- U29-U30 Downstream Truss
- L28-U29 Downstream Truss
- L28-U29 Upstream Truss
- U29-L30 Downstream Truss
- L28-L29 Downstream Truss
- L28-L29 Upstream Truss
- U48-U49 Upstream Truss
- U49-U50 Upstream Truss
- L48-U49 Downstream Truss
- L48-U49 Upstream Truss
- U49-L50 Upstream Truss
- L48-L49 Upstream Truss
- L48-L49 Downstream Truss

\* Strain gauge should be installed on one outside eyebars and be installed prior to installing second pin.

Contractor shall notify MDOT if strain gauges report forces greater than range of anticipated member forces. Truss monitoring member forces can be found in the notice to bidders. Depending on member forces reported from strain gauges, contractor may be delayed.

The Contractor shall remove all equipment associated with strain gauges after truss monitor has been completed.

**907-824.04--Method of Measurement.** Bridge Repair, Pin and Link Removal and Replacement, will be measured as a unit per each. Each is defined as the panel point location where work is to be performed (U29 downstream truss and U49 upstream truss). Panel points are shown on the plans and are per truss.

Bridge Repair, Link Inspection, will be measured as a unit per each. Each is defined as the panel point location where work is to be performed. Panel points are shown on the plans and are per truss. Top lateral and cover plate are included as one panel point.

Bridge Repair, Truss Monitoring, will be measured as a unit per each. Each is defined as the location where work is to be performed.

**907-824.05--Basis of Payment.** Bridge Repair, Pin and Link Removal and Replacement, measured as prescribed above, will be paid at the contract unit price per each location which includes all material (permanent and temporary), equipment, tools, labor, and incidentals necessary to complete the work.

Bridge Repair, Link Inspection, measured as prescribed above, will be paid at the contract unit price per each location which includes all material, equipment, tools, labor, and incidentals necessary to complete the work.

Bridge Repair, Truss Monitoring, measured as prescribed above, will be paid at the contract unit price per each location which includes all material, equipment, tools, labor, and incidentals necessary to complete the work.

Payment will be made under:

907-824-A: Bridge Repair, \* - per each

\* Specify Pin and Link Removal and Replacement, Link Inspection, or Truss Monitoring

U29 & U49 Pin & Link Replacement at US 84 WB Mississippi River Bridge, known as Federal Aid Project No. BR-0015-01(120) / 106487301 in Adams County.

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
<b>Roadway Items</b>					
0010	201-A001		1	Lump Sum	Clearing and Grubbing
0020	202-B038		89	Linear Feet	Removal of Curb, All Types
0030	202-B053		37	Linear Feet	Removal of Guard Rail Including Post, Blockouts & Hardware
0040	202-B057		1	Each	Removal of Inlets, All Sizes
0050	202-B061		2	Each	Removal of Low Mast Lighting Foundation
0060	202-B076		24,990	Linear Feet	Removal of Traffic Stripe
0070	202-B078		1,412	Square Yard	Removal of Pavement, All Types and Depths
0080	202-B263		1,280	Linear Feet	Removal of Underground Electric Wire
0090	203-EX017	(E )	1,249	Cubic Yard	Borrow Excavation, AH, FME, Class B9
0100	203-G003	(E )	1,249	Cubic Yard	Excess Excavation, FM, AH
0110	211-C001	(E )	65	Cubic Yard	Topsoil for Plant Holes, Contractor Furnished
0120	219-A001		66	Thousand Gallon	Watering [\$20.00]
0130	221-A001	(S )	72	Cubic Yard	Portland Cement Concrete Paved Ditch
0140	232-A001		1	Thousand	Fertilizer for Woody Plant Material
0150	503-C007		89	Linear Feet	Saw Cut, Full Depth
0160	603-CA005	(S )	235	Linear Feet	36" Reinforced Concrete Pipe, Class III
0170	606-B023		108	Linear Feet	Guard Rail, Remove and Replace Guard Rail & Posts
0180	606-E002		1	Each	Guard Rail, Terminal End Section, Flared
0190	609-D007	(S )	89	Linear Feet	Combination Concrete Curb and Gutter Type 2 Modified
0200	615-B001	(S )	337	Linear Feet	Precast Concrete Median Barrier
0210	619-A1007		13,440	Linear Feet	Temporary Traffic Stripe, Continuous White, Type 1 Tape
0220	619-A2007		14,250	Linear Feet	Temporary Traffic Stripe, Continuous Yellow, Type 1 Tape
0230	619-D1001		250	Square Feet	Standard Roadside Construction Signs, Less than 10 Square Feet
0240	619-D2001		620	Square Feet	Standard Roadside Construction Signs, 10 Square Feet or More
0250	619-E1001		2	Each	Flashing Arrow Panel, Type C
0260	619-F3002		674	Each	Delineators, Median Barrier Mounted, Yellow
0270	619-G4001		256	Linear Feet	Barricades, Type III, Single Faced
0280	619-G5001		150	Each	Free Standing Plastic Drums
0290	619-G7001		68	Each	Warning Lights, Type "B"
0300	619-J1002		2	Unit	Impact Attenuator, 50 MPH
0310	620-A001		1	Lump Sum	Mobilization
0320	627-C001		320	Each	Red-Clear Reflective Raised Markers

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
0330	682-A036		1,280	Linear Feet	Underground Branch Circuit, AWG 8, 3 Conductor
0340	684-A007		2	Cubic Yard	Pole Foundation, 30" Diameter
0350	686-A001		2	Each	Relocation of Existing Lighting Assemblies
0360	907-213-A001		2	Ton	Agricultural Limestone
0370	907-216-B004		3,270	Square Yard	Solid Sodding, Bermuda
0380	907-226-A001		1	Acre	Temporary Grassing
0390	907-230-A118		25	Each	Shrub Planting, Indian Hawthorn
0400	907-230-B047		8	Each	Tree Planting, Live Oak
0410	907-230-B087		25	Each	Tree Planting, Crape Myrtle
0420	907-233-A001		31	Cubic Yard	Tree Bark Mulch, Type III
0430	907-233-A002		47	Cubic Yard	Tree Bark Mulch, Type V
0440	907-407-A001	(A2 )	283	Gallon	Asphalt for Tack Coat
0450	907-618-A001		1	Lump Sum	Maintenance of Traffic
0460	907-619-E3001		5	Each	Changeable Message Sign
0470	907-626-A002		1	Mile	4" Thermoplastic Traffic Stripe, Skip White
0480	907-626-A003		2	Mile	6" Thermoplastic Traffic Stripe, Skip White
0490	907-626-C002		1	Mile	4" Thermoplastic Edge Stripe, Continuous White
0500	907-626-C004		1	Mile	6" Thermoplastic Edge Stripe, Continuous White
0510	907-626-F002		1	Mile	4" Thermoplastic Edge Stripe, Continuous Yellow
0520	907-626-F004		1	Mile	6" Thermoplastic Edge Stripe, Continuous Yellow
0530	907-626-G002		600	Linear Feet	Thermoplastic Detail Stripe, White, 4" Equivalent Length
0540	907-626-G003		210	Linear Feet	Thermoplastic Detail Stripe, Yellow, 4" Equivalent Length
0550	907-626-G004		500	Linear Feet	Thermoplastic Detail Stripe, White
0560	907-626-G005		100	Linear Feet	Thermoplastic Detail Stripe, Yellow
0570	907-626-H004		100	Linear Feet	Thermoplastic Legend, White
0580	907-682-E001		2	Each	Underground Junction Box With Concrete Pad
0590	907-699-A002		1	Lump Sum	Roadway Construction Stakes
<b>ALTERNATE GROUP AA NUMBER 1</b>					
0600	907-304-F002	(GT )	330	Ton	Size 610 Crushed Stone Base
<b>ALTERNATE GROUP AA NUMBER 2</b>					
0610	907-304-F003	(GT )	330	Ton	3/4" and Down Crushed Stone Base
<b>ALTERNATE GROUP AA NUMBER 3</b>					
0620	907-304-F004	(GT )	330	Ton	Size 825B Crushed Stone Base
<b>ALTERNATE GROUP BB NUMBER 1</b>					
0630	907-403-A006	(BA1 )	106	Ton	Hot Mix Asphalt, MT, 12.5-mm mixture
<b>ALTERNATE GROUP BB NUMBER 2</b>					

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
0640	907-403-M002	(BA1 )	106	Ton	Warm Mix Asphalt, MT, 12.5-mm mixture
					<b>ALTERNATE GROUP CC NUMBER 1</b>
0650	907-403-A007	(BA1 )	142	Ton	Hot Mix Asphalt, MT, 19-mm mixture
					<b>ALTERNATE GROUP CC NUMBER 2</b>
0660	907-403-M007	(BA1 )	142	Ton	Warm Mix Asphalt, MT, 19-mm mixture
					<b>ALTERNATE GROUP DD NUMBER 1</b>
0670	907-403-A010	(BA1 )	81	Ton	Hot Mix Asphalt, MT, 9.5-mm mixture
					<b>ALTERNATE GROUP DD NUMBER 2</b>
0680	907-403-M006	(BA1 )	81	Ton	Warm Mix Asphalt, MT, 9.5-mm mixture
					<b>Bridge Items</b>
0688	907-810-D001	(S )	1	Each	Repairs to Knee Braces at Truss Contraction Joints
	Added 11/05/2014				
0690	907-824-A001		6	Each	Bridge Repair, Link Inspection
0700	907-824-A001		2	Each	Bridge Repair, Pin and Link Removal and Replacement
0710	907-824-A001		22	Each	Bridge Repair, Truss Monitoring

STATE	PROJECT NO.
MISS.	BR-0015-01(120)

WORKING  
NUMBER

A01  
A02  
A03  
A04  
A05-A13  
A14-A17  
A18-A23  
A24-A28  
A29-A39  
A40  
A41  
A42

DESCRIPTION OF SHEET

DETAILED INDEX, SCOPE OF WORK & QUANTITIES  
GENERAL NOTES  
GENERAL PLAN & ELEVATION WESTBOUND BRIDGE  
SUGGESTED SEQUENCE OF CONSTRUCTION  
U29 & U49 TEMPORARY UPPER BYPASS ANCHORAGE  
L28 & L48 TEMPORARY LOWER BYPASS ANCHORAGE  
U29 & U49 TEMPORARY UPPER LONGITUDINAL RESTRAINT  
L29 & L49 TEMPORARY LOWER LONGITUDINAL RESTRAINT  
U29 & U49 TEMPORARY SPLICE PLATE  
U29 & U49 LINK AND PIN REPLACEMENT (1 OF 2)  
U29 & U49 LINK AND PIN REPLACEMENT (2 OF 2)  
DAILY MAXIMUM AND MINIMUM TEMPERATURES  
A5-BUILT PLANS - 1939 SUPERSTRUCTURE CONTRACT PLANS  
A5-BUILT PLANS - 1939 SHOP DRAWINGS  
A5-BUILT PLANS - 2003 CONTRACT PLANS

SHEET  
NUMBER

8001  
8002  
8003  
8004  
8005-8013  
8014-8017  
8018-8023  
8024-8028  
8029-8039  
8040  
8041  
8042  
8043-8069  
8070-8104  
8105-8126

SCOPE OF WORK

In General, The Scope Of Work Shall Consist Of Replacing U29 Downstream And U49 Upstream Upper And Lower Pins And Links. The Following Is An Overview Of The Scope Of Work Required To Replace The Upper And Lower Pins And Links:

U29 Downstream Truss  
Install Temporary Longitudinal Restraint On U29 And L29 Upstream And Downstream Trusses.  
Install Temporary Bypass On U29 Downstream Truss.  
Install Temporary Splice P On U29 Downstream Truss.  
Remove Existing 10 1/2" Diameter Lower And Upper Pins At U29 Downstream Truss.  
Remove Existing 10"x16" x 7'-6" Link At U29 Downstream Truss.  
Bore New 10 1/2" Diameter Holes Through Existing Gussets At Upper And Lower Pin Locations.  
Fabricate And Replace U29 Downstream Truss Links.  
Fabricate And Replace U29 Downstream Truss Lower And Upper Pin With New 10 1/2" Diameter Pins.  
Provide And Maintain Traffic Control In Accordance With These Plans And Mississippi Standard Specifications.

U49 Upstream Truss  
Install Temporary Longitudinal Restraint On U49 And L49 Upstream And Downstream Trusses.  
Install Temporary Bypass On U49 Upstream Truss.  
Install Temporary Splice P On U49 Upstream Truss.  
Remove The Existing 10 1/2" Diameter Lower And Upper Pins At U49 Upstream Truss.  
Remove Existing 10"x16" x 7'-6" Link At U49 Upstream Truss.  
Bore New 10 1/2" Diameter Holes Through Existing Gussets At Upper And Lower Pin Locations.  
Fabricate And Replace U49 Upstream Truss Links.  
Fabricate And Replace U49 Upstream Truss Lower And Upper Pins With New 10 1/2" Diameter Pins.  
Provide And Maintain Traffic Control In Accordance With These Plans And Mississippi Standard Specifications.


Link Inspection  
Temporarily Remove Top Lateral And Cover Plates At U19 And U69 Upstream And Downstream Trusses, U29 Upstream Truss And U49 Downstream Truss.

SUMMARY OF BRIDGE QUANTITIES			
NUMBER	ITEM	UNIT	QUANTITY
STRUCTURAL			
620-4001	MOBILIZATION	LS	1
907-824-4001	BRIDGE REPAIR, PIN AND LINK REMOVAL AND REPLACEMENT	EA	2
907-824-4001	BRIDGE REPAIR, LINK INSPECTION	EA	6
907-824-4001	BRIDGE REPAIR, TRUSS MONITORING	EA	22
907-810-0001	REPAIRS TO KNEE BRACE AT TRUSS CONTRACTION JOINTS	EA	1

DISTRICT 7 Δ

PS & E PLANS-DATE 09-12-14			
FMS CON. = 106487/301000			
REVISIONS			
DATE	SHEET NO.	BY	
09/23/14 8801.0002.0004.0018.0019	JPC		
10/23/14 8801			

SEAL:



DATE: 10/23/14

**HNTB**

10/23/14

ADDED PAY ITEM

JPG

BY

9/24/14

ADDED REVISION BLOCK, UPDATED PAY ITEMS

JPG

BY

REVISIONS

DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

U.S. HIGHWAY 84 MISSISSIPPI RIVER BRIDGE

DETAILED INDEX, SCOPE OF WORK & QUANTITIES

PROJECT BR-0015-01(120)  
106487/301000

ADAMS COUNTY

WORKING NUMBER  
A01

SHEET NUMBER  
8001